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REMARKS

I. Status Summary

Claims 1-19 are pending in the present application and have been examined.

Claims 1-19 have been rejected under 35 U.S.C. § 103(a) upon the contention that the claims are obvious over Chang *et al.* (U.S. Patent No. 6,584,459; hereinafter "the '459 Patent") in view of Sabatini *et al.* (U.S. Patent No. 5,970,500; hereinafter "the '500 Patent").

Claims 1, 13, and 19 have been amended. Support for the amendments to the claims can be found throughout the specification as filed, including particularly at page 7, lines 3-13. Additional support can be found in the Figures, particularly Figures 1 and 2.

New claims 20-22 have been added. Support for the new claims can be found throughout the specification as filed, including particularly at page 2, lines 11-13 (claim 20), and page 7, lines 3-13 (claim 21 and 22). Thus, no new matter has been presented as a result of the amendments to the claims or the addition of the new claims. Reconsideration of the application as amended and based on the remarks set forth herein below is respectfully requested.

II. Response to the Rejection under 35 U.S.C. § 103(a)

Claims 1-19 have been rejected under 35 U.S.C. § 103(a) upon the contention that the claims are unpatentable over the combination of the '459 Patent and the '500 Patent. According to the United States Patent and Trademark Office (hereinafter "the Patent Office), the '459 Patent teaches "...receiving data in a transitional format; ...converting said data into a database-compatible language; [and] ...storing said database compatible language in a ...data warehouse". The Patent Office concedes that the '459 Patent does not teach a biological data warehouse, but asserts that this defect is cured by the '500 Patent, which is asserted to teach relational database systems for storing and analyzing biomolecular sequence information together with biological annotations detailing the source and interpretation of the sequence data.

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The Patent Office thus contends: "it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of '459 [to include] a biological data relational to database system for storing and displaying genetic information". Official Action at page 3. The Patent Office further contends: "one of ordinary skill would be motivated to perform such a modification to save search time of a complex biological database, and enabling the researchers to utilize computer resources to explore any biological database, which is storing biological data such as, nucleic acid sequence information, and protein sequence, structure and function from DNA sequence data, for organisms such as *Escherichia coli*, *Haemophilus influenzae*, *Mycoplasma genitalium*, and *Mycoplasma pneumoniae*, among others, as taught by '500". Official Action at page 3.

After careful consideration of the rejection and the Patent Office's bases therefor, applicants respectfully traverse the rejection and submit the following remarks.

Initially, applicants respectfully submit that in order to support a *prima facie* case of obviousness under 35 U.S.C. § 103(a), the reference or the combination of references must disclose or suggest each and every element of the claims. Applicants respectfully submit that claim 13 has been amended to recite a method for storing and integrating biological data into a biological data warehouse comprising the steps of: (a) receiving biological data in a transitional format, wherein the biological data comprises a plurality of different data types from a plurality of biological data sources; (b) converting said biological data into a database-compatible language; and (c) storing said database-compatible language in a biological data warehouse. As such, applicants respectfully submit that the claim recites that biological data comprising a plurality of different data types from a plurality of biological data sources is received, converted, and stored in the biological data warehouse. Applicants respectfully submit that this element is not taught or suggested by the '459 Patent, either alone or in combination with the '500 Patent.

To elaborate, the '459 Patent at col. 7, lines 26-37, discloses that the system utilizes an SQL application interface (API) for searching XML documents (i.e. a single data type). Thus, the reference does not disclose receiving biological data of a plurality of different data types. Furthermore, the '459 Patent does not disclose converting said

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biological data into a database-compatible language as recited in claim 13, step (b). And finally, as noted by the Patent Office on page 3 of the Official Action, the '459 Patent does not disclose storing the database-compatible language in a biological data warehouse as recited in claim 13(c). Rather, the '459 Patent only discloses searching XML documents and storing them in a database.

Applicants respectfully submit that these deficiencies are not cured by the '500 Patent. In particular, the '500 Patent does not disclose or suggest receiving biological data of a plurality of different data types, and then converting said biological data into a database-compatible language as recited in claim 13, step (b). Close inspection of the '500 Patent indicates that while several external databases are mentioned (for example, the GenBank and TIGR databases; see col. 1, lines 52-56), there is no disclosure or suggestion in the '500 Patent of querying both of these databases and converting the data withdrawn from both into a database-compatible language for storage in one singular biological data warehouse. As a result, applicants respectfully submit that neither the '459 Patent nor the '500 Patent disclose receiving biological data of a plurality of different data types, and then converting said biological data into a database-compatible language as recited in claim 13(b). Therefore, applicants respectfully submit that the combination of the '459 Patent and the '500 Patent does not disclose or suggest each and every element of the claims, and thus does not support a rejection of claim 13 under 35 U.S.C. § 103(a).

Furthermore, the Patent Office asserts that one of ordinary skill in the art would be motivated to modify the teaching of the '459 Patent to include a biological data relational to database system for storing and displaying genetic information because such a modification would save search time of complex biological databases and enable utilizing computer resources to explore any biological database that stores biological data such as nucleic acid sequence information, protein sequences, and structure and function from DNA sequence data. Applicants respectfully submit, however, that even assuming *arguendo* that one of ordinary skill in the art would have combined the cited references to create a biological database, since neither patent discloses or suggests receiving biological data of a plurality of different data types and converting the

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biological data into a database-compatible language as recited in claim 13, the combination cannot motivate the skilled artisan to create the claimed systems or to employ the claimed method.

For example, applicants respectfully submit that the '500 Patent relates to nucleotide sequence data only. As stated in col. 4, lines 10-12, of the '500 Patent, "the present invention provides an improved relational database for storing and manipulating genomic sequence information". The '500 Patent also discloses that the GenBank and TIGR databases contain genomic sequence data and various annotations. However, the '500 Patent does not disclose or suggest converting the data found in these databases into a database-compatible language for storage in a single biological data warehouse. Thus, applicants respectfully submit that since neither the '500 Patent nor the '459 Patent discloses or suggests receiving biological data of a plurality of different data types from a plurality of biological data sources and converting the biological data into a database-compatible language, the combination of references cannot motivate one of ordinary skill in the art to arrive at the claimed invention. Applicants respectfully submit that it is only with hindsight knowledge of the instant specification that any step can be made from the disclosures of the cited patents, which are silent as to the use of multiple data sources and multiple data types, to arrive at the instantly claimed subject matter. As this type of hindsight reconstruction is impermissible, applicants respectfully request that the instant rejection be withdrawn.

Applicants respectfully submit that claim 13 has been distinguished from the combination of the '459 Patent and the '500 Patent. Applicants further respectfully submit that claim 1 has been amended to recite systems for storing and integrating biological data entries into a biological data warehouse comprising: a loader module which receives the biological data in a transitional format in a plurality of different data types from a plurality of biological data sources, converts the transitional format into formatted data, and stores the formatted data in a biological data warehouse. Additionally, claim 19 has been amended to recite a system of loading biological information into a database comprising: (a) translating means for converting biological data comprising a plurality of different data types from a plurality of biological data

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sources from a transitional format into a database-compatible language; (b) mapping means for corresponding said biological data with data present in said database; and (c) loading means for storing data into said database. As such and for reasons similar to those set forth hereinabove, applicants respectfully submit that the combination of the '459 Patent and the '500 Patent does not support a rejection under 35 U.S.C. § 103(a) of claims 1 and 19. Claims 2-12 and 14-18 depend directly or indirectly from distinguished claims 1 and 13, and thus are also believed to be distinguished from the cited references.

Accordingly, applicants respectfully submit that claims 1-19 have been distinguished from the combination of the '459 Patent and the '500 Patent, and respectfully request that the rejection of claims 1-19 over these references be withdrawn at this time. Applicants further respectfully submit that claims 1-19 are in condition for allowance, and respectfully solicit a Notice of Allowance to that effect.

### III. Discussion of the New Claims

New claims 20-22 have been added. Each of the new claims depends from claim 13. Accordingly, new claims 20-22 each include all the elements of patentably distinguished claim 13. As a result, applicants respectfully submit that claims 20-22 are believed to be patentably distinguished from the cited references for the reasons presented hereinabove with respect to claim 13. Applicants further respectfully submit that claims 20-22 are in condition for allowance, and respectfully solicit a Notice of Allowance to that effect.

### CONCLUSION

In light of the above amendments and remarks, it is respectfully submitted that the present application is now in proper condition for allowance, and an early notice to such effect is earnestly solicited.

If any small matter should remain outstanding after the Patent Examiner has had an opportunity to review the above Remarks, the Patent Examiner is respectfully

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requested to telephone the undersigned patent attorney in order to resolve these matters and avoid the issuance of another Official Action.

DEPOSIT ACCOUNT

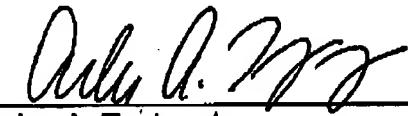
The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account No. 50-0426.

Respectfully submitted,

JENKINS, WILSON & TAYLOR, P.A.

Date: 12-23-2004

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